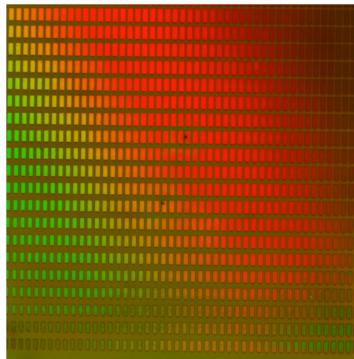


Scientific Contacts

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 - MEMS/NEMS technology
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 - stepper, XeF₂, evaporator, RTP, dicing saw
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 Liliana Stan, lstan@anl.gov
 - ALD, PVD, sputtering, evaporation
 Anirudha Sumant, sumant@anl.gov
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 Il Woong Jung, ijung@anl.gov
 - focused ion beam lithography

Nanofabrication & Devices



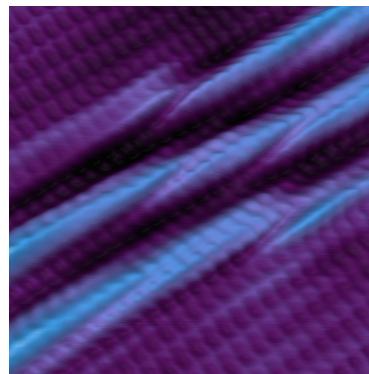
Major Tools

- JEOL 9300, 100kV electron beam lithography
- Raith 150, 30kV electron beam lithography
- FEI Nova 600 NanoLab DualBeam FIB/SEM
- Karl Suss MA6 Optical mask aligner
- ASML PAS 5000 wafer stepper
- Direct write optical lithography
- Interferometric lithography
- AJA oxide sputtering
- Wet chemistry & metrology
- Xactix XeF₂ etcher
- SPM, PSIA XE-HDD
- Deposition (Temescal ebeam evaporators, AJAs, atomic layer deposition (ALD) etc.)
- Lambda microwave plasma CVD nanocrystalline diamond
- Thermal/PECVD for CNT/graphene synthesis

Scientific Contacts

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 - LT-STM, SP-STM, AFM
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 - solar energy, organic PV, AFM, QEMs
 Brandon Fisher, bfisher@anl.gov,
 - magnetometry, STM/SEM, XRD
 Jeffrey Guest, jrguest@anl.gov
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 Nathan Guisinger, nguisinger@anl.gov
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 Xiao-Min Lin, xmlin@anl.gov
 - synthesis of nanocrystal building blocks
 Dan Rosenmann, rosenmann@anl.gov
 - evaporation, deposition, sputtering, MBE

Quantum & Energy Materials



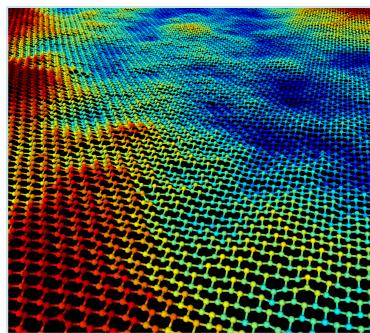
Major Tools

- UHV SPM (AFM/STM) (Omicron Nanotechnology)
- 4-probe SEM (Omicron UHV Nanoprobe)
- VT-AFM (Omicron XA)
- Createc LT-STM
- Scanning probe microscope, AFM (Veeco)
- Complex Oxide MBE (DCA R450D Custom)
- Kurt Lesker electron beam evaporator and sputtering, deposition
- Magnetometry (QD PPMS & MPMS)
- Solar simulator, QEMs (Oriel)
- TGA/DSC
- Luminescence/UV-vis-NIR
- X-ray diffractometer (Bruker D2 & D8)

Scientific Contacts

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 - photovoltaics, photocatalysts, thermoelectrics, batteries
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 - photovoltaics, optical transport
 Michael Sternberg, sternberg@anl.gov
 - software development
 Subramanian Sankaranarayanan, ssankaranarayanan@anl.gov
 - nanoscale oxide energy materials

Theory & Modeling



Major Tools

- Nanoscience Computational Facility
 30 TFlop cluster for:
 Density-functional-based tight-binding (DFTB) electronic structure package
 Time-domain nanophotonics simulation
 MPI-based parallel versions of nanophotonics and tight-binding codes
 GPAW; real space, grid-based DFT-PW
- Access to Argonne computer facilities
- Support for experimental projects
- Support for theoretical projects



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Scientific Contacts

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 - synthesis, peptide synthesis, HPLC, CD

David Gosztola, gosztola@anl.gov
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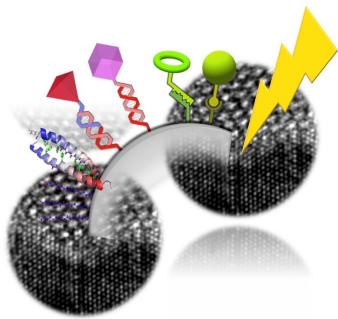
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 - bio(in)organic, biological chemistry, synthetic biology, GC/MS

Richard Schaller, schaller@anl.gov
 - transient absorption/emission spectroscopy

Elena Shevchenko, eshevchenko@anl.gov
 - 2-D and 3-D nanoparticle assembly, SEM

**Nanophotonics &
Biofunctional Structures**



Major Tools

- Ultrafast transient absorption spectroscopy
- Confocal Raman microscope, Renishaw
- VIS/NIR microscopy
- Time-resolved emission spectroscopy
- Time-correlated single photon counting
- Ultrafast microscope
- FTIR (Thermo-Nicolet)
- Fluorescence spectroscopy
- Field-emission SEM (JEOL JSM7500F)
- Electron paramagnetic resonance (Bruker)
- Circular dichroism spectrometry
- Functionalization, electro/photochemical
- HPLC, GCMS
- Laser Scanning Confocal Microscope (Zeiss)
- Post-self-assembly processing
- Peptide synthesizer
- Synthesis & surface modification of nanoparticles
- ZetaSizer Nano, Malvern

Scientific Contacts

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Electron Microscopy:

Dean Miller, miller@anl.gov
 - oxide thin film and self-assembled synthesis

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 - analytical TEM

Joyce Wang, jiewang@anl.gov
 - EMC Facility Manager

Jianguo Wen, jwen@anl.gov
 - ACAT, batteries, PV

X-ray Microscopy:

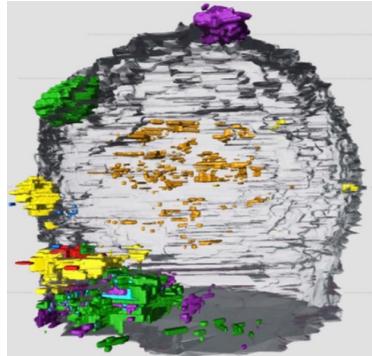
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Ian McNulty, mcnulty@anl.gov
 - diffraction, holography, x-ray microscopy, optics

Volker Rose, vrose@anl.gov
 - synchrotron x-ray scanning tunneling microscopy

Robert Winarski, winarski@anl.gov
 - x-ray imaging and tomography

Electron & X-ray Microscopy



Major Tools

Electron Microscopy

- ACAT: Argonne Chromatic Aberration-corrected TEM
- FEI Tecnai F20ST TEM/STEM
- Field-emission TEM (JEOL 2100F)
- Zeiss 1540XB FIB-SEM
- FEI CM30T, analytical transmission electron microscope
- Hitachi S-4700-II high-vacuum SEM
- FEI Quanta 400F environmental and variable-pressure SEM

X-ray Microscopy

- Hard X-ray nanoprobe beamline, Sector 26 of APS
- Scanning nanodiffraction and ptychography
- Chemical and structural nanoimaging
- Heating/cooling specimen stage
- 30 nm resolution, 6 - 12 keV
- In situ/in operando experiments
- Synchrotron x-ray STM (SX-STM) at Sector 4 of APS